A Runway to Applied Academics – Montgomery Co. Tech Prep Project Has Wind Beneath Its Wings

Montgomery Co. ATC Principal Mike Kindred has always loved aviation, so it wasn't out of the question for a Tech Prep project to be developed around building an airplane.

"This whole idea began as a result of several of us sitting around a table and throwing around ideas about what type of project we could create to incorporate the integration of academics and theory with applied technical learning," says Kindred.

Once the committee made a decision to build an airplane, Kindred contacted Danny Hill who runs the charter service at the airport for some assistance. Danny suggested getting in touch with his dad because he gets involved helping people with various projects. Kindred quickly made contact with Ron Hill, manager of the Mt. Sterling-Montgomery Co. Airport and the project instantly *took flight.*

two-seater super cub wide body airplane

Ron Hill is a “hands on” technical advisor.

Dr. Ahmed Sabie, Mike Kindred and Ron Hill discuss Tech Prep project goals.

“Mr. Hill met with our committee to discuss several different possibilities regarding the type of plane to build. We ultimately settled on a two-seater super cub wide body airplane,” said Kindred. “So, this began as a high profile project and is being nurtured to fruition under the expertise and watchful eye of Ron Hill. He agreed to serve as the technical counselor for the entire Tech Prep project.”

Besides Hill and Kindred, Joe Mitchell, Montgomery Co. ATC automotive technology instructor and Jeff McCarty, carpentry instructor, are involved from the area technology center. From the local school district, Marty Feltner, Montgomery Co. Tech Prep coordinator and information technology instructor; Leah Manley, physics instructor; Barry Follett, science instructor; Anita Hendrickson and Felicia Bond, math instructors and

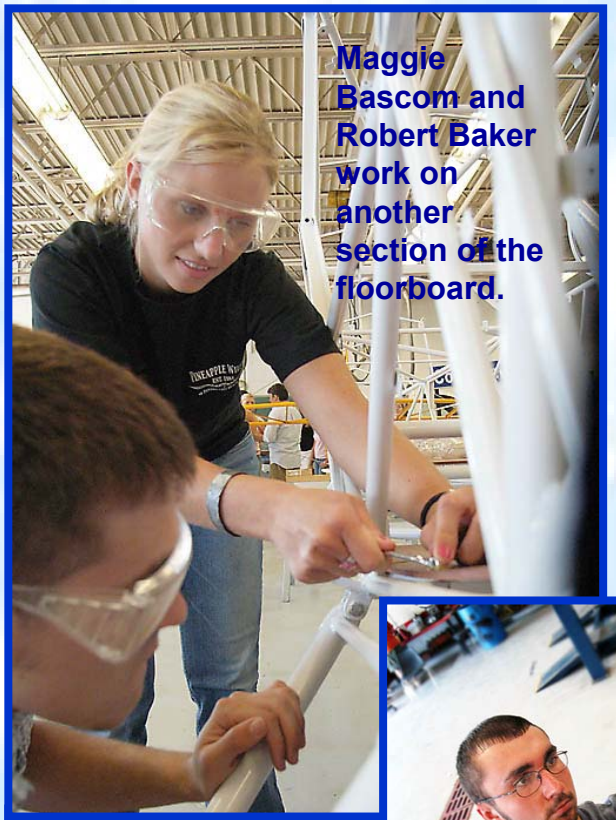
Charlotte Jones, social studies instructor have helped in various aspects of the project.

In January 2004, Hill, Kindred, Mitchell, and Feltner visited a factory in Kenosha, Wisconsin where the type of plane they wanted for the project is manufactured. From there, they went to Oshkosh where they attended a seminar to learn how to put the "skin" on the plane. The trip was an eventful experience.

Robert Baker, senior physics student, works to secure a section of the floorboard.

Because of the project, Kindred has also become involved in the local Experimental Aircraft Association (EAA). Ron Hill is also actively involved in EAA. This has provided an avenue for promoting the airplane, as well as garnering support for the project.

"I got in this as a technical counselor for the EAA and it's one of several projects that I am involved with," says Hill. "I think a venture like this gives each of these kids an opportunity to become engaged in a fun project. It also gives them a practical approach of applying the academic concepts they are supposed to be learning at the high school. They seem to get it."



Maggie Bascom and Robert Baker work on another section of the floorboard.

Ron Hill and Joe Mitchell discuss dimensions for the plane's floorboard.

Alan Dehart, an automotive technology student, works on a support wire in the rear assembly.

"We are bridging a gap this year between the academic and technical curricula with this project," says Feltner. "The biggest value that the kids are gaining is the applied learning component. Students in math and physics are learning the concepts and applying them to building an airplane and flight. They get to see this firsthand instead of just reading about it in a book. This has generated excitement and what a difference it has made."

"What I perceive as positive about this project is that it makes math and science real to our students," says Shannon White, Montgomery Co. High School principal. "On the vocational-technical end, it helps the kids understand the concepts we are trying to teach at the high school."

The actual work of assembling the airplane takes place in Joe Mitchell's automotive technology lab. During the process of constructing the plane, other classes have conducted research and are learning about the various aspects of flying.

Leah Manley watches as her students work on the plane.

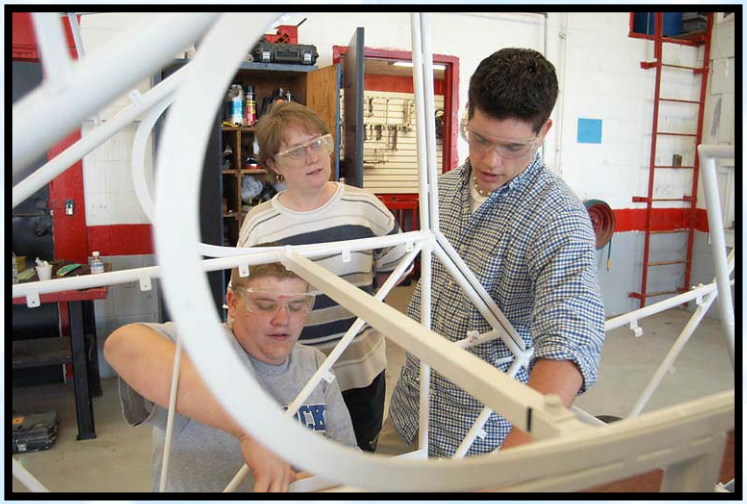


Photo at right: Brittany Hunt (left) watches as Brandi Kratzer measures twice and gets ready to cut once.

"I was nervous cutting out a portion of the floorboard because I knew it would effect more than just learning in the classroom," says Brandi.

"Hands-on experiences in academic classes are the most effective ways to teach concepts," says Leah Manley, physics instructor. "We became involved in this overall project by researching the physics of flight and doing small experiments using the Bernoulli Principle. My students are excited in getting to come to the area technology center to see how the plane is being constructed."

Even though the plane has been put together from a kit, there are some pieces that have had to be manufactured in the carpentry class. Brandi Kratzer, a senior, was asked to cut out a portion of the floorboard for the plane. She was both anxious and excited in measuring and executing the cut because she had never been in a carpentry class. Her dimensions and handiwork were perfect when examined by Mr. Hill.

"It gave me a sense of understanding how you use the concepts we learn in the classroom in real life," she said.

Maggie Bascon, a current physics and former automotive technology student says, “I learned that there are four major elements that must take place in order for a plane to fly – thrust, drag, lift and weight.”

Darrin Hostetler, a sophomore enrolled in the automotive technology program said, “I believe this plane project has helped me to understand math better. I can figure out the problems easier because it sinks in better doing hands-on stuff.”

“This is a good project for the school and a good learning experience,” says Josh Ballard, a senior enrolled in the automotive technology and computer technology programs at the ATC. “I’d like to be an auto mechanic when I get out of school and I’m looking forward to working on the installation of the engine during this project. It will be a good experience for me.”

Ron Hill shows Josh Ballard some specifics regarding the brakes and rudder pedals on the plane.

The building of an airplane is a major undertaking; however, another activity has been identified to add the finishing touches. Upon completion, junior student Rachael Mansfield, plans to design the Indian Head and KY Tech Prep logo to be put on both sides of the plane.

"I am glad that I got volunteered for this project – it's a privilege," says Rachael.

"Building this airplane is just one step in making the students dreams come true," said Joe Mitchell. "It has been a great experience and generated a lot of enthusiasm throughout our school and community."

"The effort in building this plane has been astronomical and will carry over into the next school year; however, it has created an opportunity for the development of a very successful Tech Prep project. In addition, it has helped in building alliances with local school district personnel and in reaching out to involve the community. The final outcome for this project is to display the plane at the Mt. Sterling/Montgomery Co. Airport," said KY Tech Prep Director Dr. Ahmed Sabie.

"The Mt. Sterling/Montgomery Co. Airport is the fifth busiest in the state and we decided that this high profile Tech Prep project was a good way to bring about an awareness of who we are and what we do," said Kindred. "We knew people would get involved in this endeavor and we have not been disappointed. Ron Hill has been the backbone for the entire project and we appreciate his efforts. The goals of Tech Prep are being achieved and we are working to create new opportunities for blending academic concepts with applied technical learning."